

Q.P. Code :11087

[Time: Three Hours]

[Marks:80]

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt **any three** question from remaining five question
 3. Draw neat well **labeled** sketches
 4. **Figure** at right side indicate marks

- Q.1 Attempt any four question 20
- a) Construct the TTT diagram for carbon steels.
 - b) Define fatigue. Explain its mechanism in detail.
 - c) Write a note on Aluminum alloys.
 - d) List important properties of elastomers.
 - e) Describe the term sub- angle grain boundary.
- Q.2 10
- a) Elaborate on different mechanisms of creep with neat sketch. 10
 - b) What do you mean by Rheological fluids? Explain their types in detail. 10
- Q.3 05
- a) Explain the solidification of polycrystalline materials. 05
 - b) Differentiate between ductile and brittle fracture. 05
 - c) Describe composite types based on the matrix materials. 10
- Q.4 10
- a) Give the types of magnetic materials. Explain any two of them briefly 10
 - b) Draw Iron –Iron carbide diagram and explain microstructural phases in detail. 10
- Q.5 10
- a) Categorize cast irons completely. Describe them by labeled drawing of their microstructures. 10
 - b) Explain Metallic and Ceramic Magnetic materials in detail with its applications. 10
- Q6 Write a short note **any four** 20
- a) Smart materials
 - b) CCT diagram
 - c) Electro – rheological fluids
 - d) Stacking faults
 - e) Cemented carbides
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